



THE UNIVERSITY *of* EDINBURGH

## Edinburgh Research Explorer

### Opportunities and Benefits of People Analytics for HR Managers and Employees: Signals in the Grey Literature

**Citation for published version:**

Tursunbayeva, A, Pagliari, C, Di Lauro, S & Antonelli, G 2019, 'Opportunities and Benefits of People Analytics for HR Managers and Employees: Signals in the Grey Literature', Paper presented at The 13th Mediterranean Conference on Information Systems (MCIS), Naples, Italy, 2019, Naples, Italy, 27/09/19 - 28/09/19. <[https://aisel.aisnet.org/cgi/viewcontent.cgi?article=1003&=&context=mcis2019&=&sei-redir=1&referer=https%253A%252F%252Fscholar.google.co.uk%252Fscholar%253Fstart%253D10%2526q%253DClaudia%252BPagliari%252C%252Bethics%2526hl%253Den%2526as\\_sdt%253D0%252C5%2526as\\_vis%253D1#search=%22Claudia%20Pagliari%2C%20ethics%22](https://aisel.aisnet.org/cgi/viewcontent.cgi?article=1003&=&context=mcis2019&=&sei-redir=1&referer=https%253A%252F%252Fscholar.google.co.uk%252Fscholar%253Fstart%253D10%2526q%253DClaudia%252BPagliari%252C%252Bethics%2526hl%253Den%2526as_sdt%253D0%252C5%2526as_vis%253D1#search=%22Claudia%20Pagliari%2C%20ethics%22)>

**Link:**

[Link to publication record in Edinburgh Research Explorer](#)

**Document Version:**

Publisher's PDF, also known as Version of record

**General rights**

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

**Take down policy**

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact [openaccess@ed.ac.uk](mailto:openaccess@ed.ac.uk) providing details, and we will remove access to the work immediately and investigate your claim.



2019

## **OPPORTUNITIES AND BENEFITS OF PEOPLE ANALYTICS FOR HR MANAGERS AND EMPLOYEES: SIGNALS IN THE GREY LITERATURE**

Aizhan Tursunbayeva

*University of Edinburgh*, [aizhan.tursunbayeva@gmail.com](mailto:aizhan.tursunbayeva@gmail.com)

Claudia Pagliari

*University of Edinburgh*, [Claudia.Pagliari@ed.ac.uk](mailto:Claudia.Pagliari@ed.ac.uk)

Stefano Di Lauro

*University of Naples Federico II*, [stefano.dilauro@gmail.com](mailto:stefano.dilauro@gmail.com)

Gilda Antonelli

*University of Sannio*, [gilda.antonelli@unisannio.it](mailto:gilda.antonelli@unisannio.it)

Follow this and additional works at: <https://aisel.aisnet.org/mcis2019>

---

### **Recommended Citation**

Tursunbayeva, Aizhan; Pagliari, Claudia; Di Lauro, Stefano; and Antonelli, Gilda, "OPPORTUNITIES AND BENEFITS OF PEOPLE ANALYTICS FOR HR MANAGERS AND EMPLOYEES: SIGNALS IN THE GREY LITERATURE" (2019). *MCIS 2019 Proceedings*. 31.

<https://aisel.aisnet.org/mcis2019/31>

This material is brought to you by the Mediterranean Conference on Information Systems (MCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in MCIS 2019 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# OPPORTUNITIES AND BENEFITS OF PEOPLE ANALYTICS FOR HR MANAGERS AND EMPLOYEES: SIGNALS IN THE GREY LITERATURE

*Research full-length paper*

*Track N° 13 – Big Data and Business Analytics Ecosystems*

Aizhan Tursunbayeva, University of Edinburgh, Edinburgh, UK,  
aizhan.tursunbayeva@gmail.com;

Claudia Pagliari, University of Edinburgh, Edinburgh, UK, claudia.pagliari@ed.ac.uk;

Stefano Di Lauro, University of Naples Federico II, Naples, Italy,  
stefano.dilauro@gmail.com;

Gilda Antonelli, University of Sannio, Benevento, Italy, gilda.antonelli@unisannio.it.

## Abstract

*With its promise to help leaders better understand and optimize their workforce, People Analytics is attracting increasing attention in Human Resource (HR) Management and has been recently defined as one of the top 10 HR technology disruptions that could transform the way we work and manage organizations. Despite this optimism, and the growing market in People Analytics tools and services, recent literature reviews show that it has been largely unexplored as a research topic, and it is little understood beyond HR innovators. We are currently analyzing social media, and the ‘grey literature’ it points to, to obtain insights into how scholars, business innovators, and HR are talking about the benefits and opportunities of People Analytics and the key sources of knowledge or evidence guiding this narrative. The provisional results reported here illustrate how we analyzed relevant Tweets with reference to an existing framework for classifying PA benefits for different HRM practices. This analysis, and our broader scoping review, aim to provide new insights for HR practitioners and academic researchers.*

*Keywords: Big Data, People Analytics, Human Resources, Benefits.*

## 1 Introduction

The capture, analysis, and use of analysis of big (and small) data for supporting organizational intelligence and planning are becoming routine in many sectors, with digital analytics being increasingly integral to the management of supply chains, quality, marketing, customer engagement and much more. The use of digital systems and data analytics to support and improve Human Resources Management (HRM) is also gaining traction. This practice is has been referred to as *Human Resource-*, *Talent-*, *Human Capital-*, *Workforce-* or *People Analytics*. While these terms are often used synonymously, there are subtle differences in their scope and emphasis, reflecting different communities and practices. For example, it has been observed that HR analytics mostly concerns conventional HRM practices, while People Analytics also reflects strategic organizational priorities (Van Vulpen, 2016). People Analytics has recently been defined as “*an emerging area of HRM practice, research and innovation concerned with the use of information technologies, descriptive and predictive data analytics and visualization tools for generating actionable insights about workforce dynamics, human capital, and individual and team performance that can be used strategically to optimize organizational effectiveness, efficiency and outcomes, and improve employee experience*” (Tursunbayeva, Di Lauro and Pagliari, 2018).

With its promise to help leaders better understand and optimize their workforce, People Analytics is attracting increasing attention in both HRM and executive circles and has been recently identified as

one of the top 10 HR technology disruptions that could transform the way we work and manage organizations (Bersin, 2017). Despite this narrative and the growing market in People Analytics tools and services, recent reviews show that it has been largely unexplored as a research topic and it is little understood beyond HR innovators (Tursunbayeva et al., 2018; Marler and Boudreau, 2017). To further understand the issues raised in these recent literature reviews on People Analytics, we are currently analyzing additional sources of grey literature. This paper reports one component of this work; based on analysis of social media, with a specific focus on the actual and potential *benefits* or *opportunities* described for diverse HRM practices. Although several existing publications discuss the benefits of People Analytics (e.g. Angrave et al., 2016) to the best of our knowledge this is one of the first attempts to classify the benefits and opportunities from People Analytics for a wide range of HRM practices adopted in organizations.

The review aims to reach a multi-sectoral audience, including HR managers and CEOs; Organizational scientists and academics working in HRM; International consulting firms; Smaller consultancies and change management specialists; Technology vendors, entrepreneurs, and People Analytics innovators; Data Scientists; and Employees.

## 2 Methodology

Scoping reviews are exploratory research exercises often used to map emerging topics on which formal academic literature may lag behind developments. They may use a combination of research database searches, expert consultations, and analyses of online and grey literature. Here we present the results drawn from social media.

The growth of social media as a tool for professional information sharing and discourse has established them as a useful source of data in the humanities and social sciences (Social Media Research Group, 2016). In the case of People Analytics, social media represent a key channel for community building and knowledge sharing, where trends and opinion leaders emerge, and key documents are legitimized through crowdsourced critique and consensus. For this reason, we mined social media data to identify relevant publications referred to hereinafter as *grey literature*. This involved a combination of *purposive searches* on Twitter covering a defined period between 21/03/2006 (the date when Twitter was created) and 9/12/2018, *social media listening* over the course of a year, and *snowball sampling* from key industry reports, academic papers and commentary referenced in the postings. Diverse clusters of HR/People Analytics terms were used as the nucleus for the Twitter searches. These included, for example, #talentanalytics; #peopleanalytics; hranalytics; #humancapitalanalytics; #humanresourceanalytics; #workforceanalytics; and #employeeanalytics. Relevant full-text articles referred to in the tweets were sourced and content analyzed, along with the key publications referenced within these.

The review we focused on identifying the stated *opportunities* and *benefits* of People Analytics, including both generic benefits and specific benefits for diverse HRM practices.

Following Tursunbayeva and colleagues (2018) opportunities and benefits of People Analytics were classified with reference to:

- A framework by Isson and Harriott (2016) which organizes People Analytics into 7 “pillars” according to its potential impact on: 1. Workforce planning; 2. Sourcing; 3. Acquisition/hiring; 4. Onboarding, culture fit, and engagement; 5. Performance assessment and development and employee lifetime value; 6. Churn and retention; and 7. Wellness, health, and safety.
- Additional categories relating to People Analytics, including collaborations; diversity and inclusion; people risks; and inter-organizational relationships.

## 3 Results

126 tweets containing the hashtags of interest were identified from Twitter. 96 tweets remained for full analysis after removing duplicates. The first relevant tweet appeared in 2015, however, most of the tweets were published in 2018 (n=75). David Green (n=11), HR Curator (n=8) and Soumyasanto Sen (n=5), three influencers and People Analytics leaders, tweeted the most on this topic. Most of the 96 tweets provided links to grey literature publications that were analyzed. Among these 21% were

LinkedIn Pulse articles. The 30 excluded tweets included live reports from conferences and links to webinars, YouTube videos or others' posts. Snowballing revealed 22 additional grey literature publications, which were added to the analysis.

The search results pointed to both generic benefits arising from People Analytics, and specific benefits for diverse HRM practices.

### **3.1 Generic benefits**

Some proponents of People Analytics promise benefits from People Analytics projects even from mining relatively simple self-reported or static HR data. However, it is envisaged that emerging analytical tools and paradigms provide opportunities to amass and draw meaning from unprecedented volumes of structured and unstructured data. Beyond their value for HR administration, organizations were historically motivated to collect these data by the need to produce evidence for litigation, to preserve business records, and to respond to regulators' demands for information. More recently it has been recognized that applying new analytic techniques to this data can also open up new management capabilities, such as visualizing employee interactions, mapping expertise, tracking employee sentiment, and providing insights into all human activity across the organization (Leong, 2017). These are seen as having the potential to maximize organizational efficiency, increase productivity and encouraging greater collaboration between employees (Jacobs, 2017).

Even achieving compliance in People Analytics projects with recently fully enforced in the European Union General Data Protection Regulation was mentioned as a potential benefit for organizations. In particular, it was mentioned to help transform business and people processes (Lingard, 2018).

### **3.2 Automation of HR Processes**

HR teams are often overwhelmed with administrative work (e.g. resume review or training administration). Social media commentators and key authors see Artificial Intelligence (AI) as a potential game-changer for automating these business processes. The promise is HR leaders and professionals' time will be released to allow them to spend more time with their business partners and employees focusing on strategic, relational work (Forbes, 2018). One report claims that 55% of the US HR managers predict that AI will be a regular part of their work within the next five years (Dastin, 2018).

Many claim that automation and the human touch should not be mutually exclusive. Though AI has already been reported to have replaced HR professionals in many organizations from diverse industries. For example, it is claimed that AI has replaced 30% of IBM's HR staff (Rosenbaum, 2019).

The use of data and analytics also promises to change the perception of HR as an administrative function. Many are convinced that by providing data on organizations' most valuable asset – their employees – HR professionals can become a strategic partner to the C-suite, ensuring also the place in organizational business transformation initiatives (Pease, 2018).

### **3.3 Sourcing, acquisition, and hiring**

The use of People Analytics technologies and techniques promises to transform how organizations identify and recruit employees. Thus, for example, automated programs promise to speed the review of resumes, enabling them to be sorted and prioritized, with the most promising candidates on top.

This is envisioned not only to save time and costs but also to make hiring processes fairer and more objective. It is claimed that AI algorithmic assessment platforms can be audited and reprogrammed if bias is discovered, which is seen as being much easier than reducing human bias (Forbes, 2018). For example, it was recently found that Amazon's computer model for rating potential employees was not doing this in a gender-neutral way as it was trained on a 10-year database of resumes that had been mostly submitted by men. Amazon later reported having altered the program to remove the bias (Dastin, 2018), although concerns about how successful this has been, have lingered in social media narratives. Meanwhile, IBM's Watson and similar AI tools promise to enable HR Professionals to compare candidates' social media profiles to those of successful hires.

Other tools such as, for example, HireVue, are claimed to have the capability to analyze candidate's language and other characteristics, thus providing insight into their personality (Wheeler, 2015) through convergence with standard personality tests and job profiles.

Automated applicant tracking systems, from their side, promise to communicate to candidates through each stage of the recruitment process to keep them updated on the status of their applications. Thus, lessening calls recruiters get from candidates inquiring about their application status and generally creating a favorable candidate experience (Forbes, 2018).

### **3.4 Workforce (profiling and) planning**

It is claimed that People Analytics can help employers to better understand the skills and competencies needed to achieve a goal or to do a job (Wheeler, 2015), a practice often referred to as skills inventorying. For example, Google recently reported performing an analysis of the data it had accumulated on successful hires, their skills and competencies, and their performance, while in 2012, IBM reported successfully piloting skill analysis of their 300,000 employees worldwide (Perkins, Holtman and Murphy, 2012). Beyond simply profiling the current workforce, People Analytics promises employers an opportunity to anticipate and plan for their future HR needs in a more agile way.

### **3.5 Learning and Development**

People Analytics overlaps with the field of Learning Analytics insofar as it seeks to improve skills acquisition by observing how employees respond to diverse training approaches or materials and tailoring delivery methods to suit their learning styles. For example, visual learners would be able to see more charts and videos than employees who prefer to read, while staff who learn by doing could be offered simulations. It is predicted that information about what employees have learned, what books they have read, their level of literacy, or the languages they use may be collected from employees' personal social media data. And the learning progress is expected to be measured continuously, enabling the difficulty and depth of content to be tailored to employees' proficiency and progress (Wheeler, 2015).

### **3.6 Performance assessment and development, and employee lifetime value**

People Analytics promises to shift the focus of Performance Management processes from standard appraisals to continuous monitoring, feedback, coaching, accountability, and transparency.

It is envisioned that People Analytics, and AI, in particular, will help to eliminate unconscious bias that can prevent managers from being fair during reviews or in awarding promotions. For example, by spotting unrecognized trends, AI can help managers with difficulties in identifying patterns in reviews of direct reports or their colleagues, thus potentially helping managers to adjust their behaviors (Chowdhury, 2018).

### **3.7 Onboarding, culture fit, engagement, and collaboration**

Organizations promoting People Analytics projects also claim that this can improve employee engagement at work and enhance work/life balance, which can make them happier, more loyal, and as a result more collaborative, innovative, and productive. Productivity is generally claimed to be achieved by helping individuals and teams to work better. Thus, many sector leaders, such as Microsoft, have started exploring how using data analytics can help employees and teams to become more engaged and productive by understanding their habits and behaviors. It is predicted that this information will increasingly be used to match employees with jobs that suit them the most and help to place them in teams that will work and collaborate well together (Hogan, 2016). This approach to team structuring also promises to help leverage the next generation of fluid or 'gig' workers, who are expected to be productive immediately (Chowdhury, 2018).

The actions of some employees in different countries are already being analyzed in real time by specialized systems to help managers and organizations identify the most collaborative workers (e.g. Isaak). It also claimed that combining quantitative behavioral indicators with qualitative assessments

and sales performance figures will give a detailed picture of how behavior affects output and organizational results (Booth, 2019; HR Transformer Blog, 2016).

### 3.8 Wellness, health, and safety

Many organizations offer staff health and wellness schemes, such as gym memberships, online stress management tools and wearable exercise trackers, designed to improve wellbeing and performance, and thus reduce absences and contain employers' health insurance costs (Marchant, 2019). It is predicted that in the next decades, life insurance premiums will be calculated also based on the data from wearables (Booth, 2019). In addition to benefits for employers, it is envisaged that such monitoring may benefit employees by enabling them to demonstrate evening or weekend working (Booth, 2019).

In some cases, wearables extend to implanted microchips, which employees can use to open doors, pay for purchases, monitor or store their medical information (Marks, 2017).

Organizations that have launched these programs claim their employees are positive about them. Overall, according to AXA's Health Tech & You State of the Nation report, 57% of working adults would be open to wearing a fitness band or similar if supplied by their employer, and 58% would be comfortable sharing data with their employer (Jacobs, 2017). Such organizations also claim that their employees can opt out, as participation is optional. Some are even said to offer fake devices, so employees opting out will not be identified. It is claimed that the data derived from these programs is only analyzed and presented at an aggregated level and not at the level of individual employees, thus protecting privacy and confidentiality (Ferrari, 2017).

The usefulness of these programs is still not confirmed. In fact, a recent randomized controlled trial of over 5,000 employees who had volunteered to participate in a digitally-supported wellness program found no effect on employees' activities, health, productivity or healthcare costs (Carroll, 2018).

### 3.9 Churn and retention

Employees often leave organizations because they are unsatisfied or unhappy. Finding, hiring and training alternative personnel can have direct and indirect costs for organizations. For example, the cost of replacing a registered nurse in health organizations in the USA can range between 22-64K USD (Lewin Group, 2009). Various organizations have been exploring attrition modeling to reduce the economic cost of undesired turnover (Marriott, 2016) and those already using People Analytics tools to do it claim to achieve good results. For example, it is claimed that by using artificial intelligence IBM can predict which employees will leave a job with 95% accuracy (Rosenbaum, 2019).

## 4 Discussion

This paper aimed to identify and briefly describe the benefits and opportunities for diverse HRM practices reported in grey literature identified through searching social media. It complements two relevant and recent literature reviews on People Analytics (Tursunbayeva et al., 2018; Marler and Boudreau, 2017) that did not draw on this literature source.

Using social media has exposed a growing stream of grey literature on People Analytics that is unlikely to appear in conventional searches of academic databases. While this conference paper explicitly aims to report the benefits and opportunities referenced in these sources, rather than other considerations, these positive views were seen to dominate, and be actively promoted, in this literature. Despite this dominance, such envisaged benefits were mainly based on theory or experiential learning from organizations piloting these practices, rather than on concrete evidence of impact.

Publications referenced in social media posts describe the benefits from People Analytics for a range of diverse HRM practices, including those described by Isson and Harriott (2016) - *workforce planning; sourcing; acquisition/hiring; onboarding, culture fit and engagement; performance assessment and development, employee lifetime value; churn and retention; wellness, health and safety* along with *collaboration*, as identified in a recent review (Tursunbayeva et al., 2018). An additional category of anticipated benefit that emerged from our analysis is *Automation* (particularly with AI), echoing recent reports on HR technology disruptions that will change how we work and manage organizations (Bersin, 2017). These are illustrated in Figure 1/

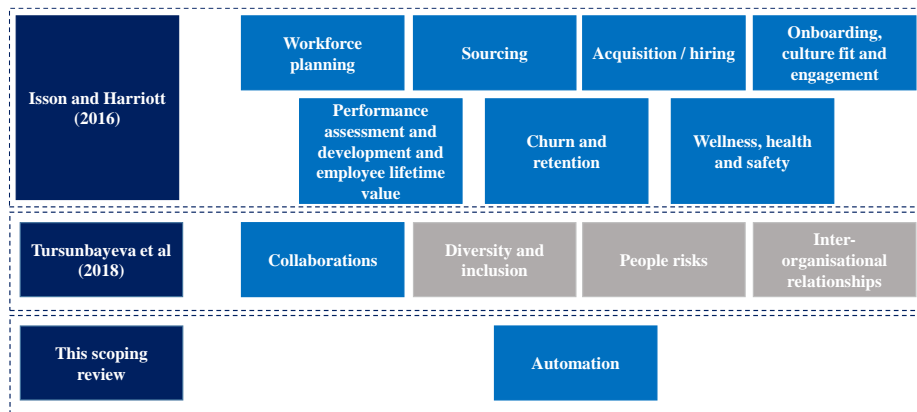


Figure 1. Benefits of People Analytics for diverse HRM practices, described cumulatively.

Our findings reveal that in most cases, the benefits of People Analytics were framed from the perspective of organizations, HR practitioners or People Analytics specialists. In the smaller number that considered benefits for employees, most referred to professional learning and development or wellness and health, although in both cases benefits for organizations could outweigh those for employees. This is not surprising, as grey literature promotes the adoption and use of People Analytics in organizations. However, considering that People Analytics initiatives are projected to fail without employees' participation or their consent to share their data with employers (Ferrar, 2017) future studies and applied projects need to explore (preferably empirically) potential benefits and opportunities specifically for employees. This can inform and guide future People Analytics projects, and potentially increase their chances for success.

Analysis of the publications identified through the social media posts demonstrated optimism that People Analytics could expand the scope of traditional HRM practices. For example, while workforce planning in the past was focused primarily on estimating and forecasting workforce *numbers* (as it still is in some sectors such as healthcare), People Analytics promises to extend this to understanding the skills and competencies organizations need for efficient and effective functioning. Although much existing social media narrative and frequently cited reports portray People Analytics initiatives with noble intentions, such as reducing unconscious bias in recruitment and selection processes, achieving this in practice is challenging, even for technology sector leaders. For example, Amazon discovered that their assessment algorithm for screening candidates' CVs was not gender-neutral, as it had been trained predominantly using data from men's CVs (Dastin, 2018). For this reason, People Analytics technologies and practices should be considered as unproven innovations and carefully pilot tested prior to their launch or full roll-out, potentially with the involvement of scholars to document without bias the outcomes of these evaluations. Some commentators also emphasized the importance for organizations of including a wide range of stakeholders when contemplating a new People Analytics project, including legal and compliance specialists, as well as senior managers and employees.

The expanding use of People Analytics by organizations raises new questions for interdisciplinary management science and adds to current debates over the future of human work and employment in a digitized, algorithm-driven society. Our social media analysis has also exposed a relatively narrow, but growing, stream of grey literature that considers numerous risks of People Analytics projects, related to employee surveillance, privacy, and rights. While these are not considered in the current paper, ethical aspects of People Analytics were the topic of our recent workshop at the British Academy of Management and is the focus of a separate review currently underway by our team.

## 5 Conclusion



The social media analysis described here provides insights about how commentators in organizational studies, business innovations, and human resources are talking about the benefits and opportunities of People Analytics for diverse HRM practices, as well as furthering academic conversations about this emerging area of applied data science (e.g. Angrave et al, 2016).

These preliminary results indicate the enthusiasm of many organizations to embrace these innovations, despite their relative immaturity. Given the rapid pace of technological change, the grey literature can provide valuable insights that may not yet be documented in formal research publications. We acknowledge the limitations of our search strategy, which was aimed at informing a more comprehensive review and inevitably captures only a snapshot of the available literature. Nevertheless, the findings of this review are valuable, as this is one of the first attempts to synthesize grey literature on this topic for the attention of academic scholars. The findings may help future researchers and practitioners to prioritize which HRM practices they would like to adopt People Analytics for, as well as to benchmark their benefits against those reported in this review.

Finding so few publications that contain empirical data, rather than descriptive accounts and forecasts, reinforces our previous call for scholars to take a critical approach to the topic of People Analytics as well as undertaking the evaluation necessary to demonstrate their implementation challenges and their impacts on organizations and employees.

While this analysis focused on the opportunities and benefits of People Analytics, we also observed emerging risk narratives, chiefly concerning privacy regulation (Hill, 2019) which are likely to temper the prevailing optimism and are currently exploring this as part of a separate review.

## References

- Angrave, D., Charlwood, A., Kirkpatrick, I., Lawrence, M., and M. Stuart (2016). "HR and analytics: Why HR is set to fail the big data challenge". *HRM Journal*. 26.
- Bersin, J. (2017). *HR technology disruptions for 2018. Productivity, design, and intelligence reign*.
- Booth, R. (2019). *UK businesses using artificial intelligence to monitor staff activity*. The Guardian.
- Carroll, A.E. (2018). *Workplace Wellness Programs Don't Work Well. Why Some Studies Show Otherwise*. The New York Times
- Chowdhury, R. (2018). *How Human-Centric AI Can Help Your Employees Love Mondays Again*. Forbes.
- Dastin, J. (2018). *Amazon scraps secret AI recruiting tool that showed bias against women*. Reuters.
- Ferrar, J. (2017). *Ethics and Privacy in Workforce Analytics (The Power of People - article 6 of 7)*. LinkedIn.
- Forbes (2018). *Forbes Human Resources Council: 11 ways AI can revolutionize Human Resources*. Forbes.
- Hill, R. (2019). *Year 1 of GDPR: Over 200,000 cases reported, firms fined €56 meeelli... Oh, that's mostly Google*. The Register.
- Hogan, K. (2016). *Empower your employees to leverage their own data*. LinkedIn.
- HR Transformer Blog (2016). *The qualified workplace: Technology vs Trust?*
- Isson, J.P. and J.S. Harriott (2016). *People analytics in the era of big data: Changing the way you attract, acquire, develop, and retain talent*. John Wiley & Sons Inc.
- Jacobs, K. (2017). *The ethics of gathering employee data*. HR Magazine.
- Leong, K. (2017). "Is your company using employee data ethically?" *Harvard Business Review*.
- Lewin Group (2009). *Evaluation of The Robert Wood Johnson Wisdom at Work*. Robert Wood Johnson Foundation.
- Lingard, S. (2018). *GDPR compliance: practical steps to take control of your HR data*. HR Zone.
- Marchant, G.E. (2019). "What Are Best Practices for Ethical Use of Nanosensors for Worker Surveillance?" *AMA Journal of Ethics*. 21(4) 356-362.
- Marks, G. (2017). *A Wisconsin company offers to implant remote-control microchips in its employees*. The Washington Post.

- Marler, J. H. and J.W. Boudreau (2017). "An evidence-based review of HR Analytics". *International Journal of Human Resource Management*, 28(1), 3–26.
- Marritt, A. (2016). *People Analytics, what's in it for the Employees?* Analytics in HR Blog & Academy.
- Pease, G. (2018). *People Analytics – Privacy vs. Transparency*. Best Practice in Human Resource.
- Perkins, D.N.T., Holtman, M.P. and J.B. Murphy (2012). *Leading at the edge: leadership lessons from the extraordinary Saga of Shackleton's Antarctic expedition*. AMACOM.
- Rosenbaum, E. (2019). *IBM artificial intelligence can predict with 95% accuracy which workers are about to quit their jobs*. CNBC.
- Social Media Research Group (2016). *Using social media for social research: An introduction*. Government Social research.
- Tursunbayeva, A., Di Lauro, S. and C. Pagliari (2018). "People analytics—A scoping review of conceptual boundaries and value propositions." *International Journal of Information Management*. 43, 224–247.
- Van Vulpen, E. (2016). *The difference between people analytics and HR analytics*. <https://www.analyticsinhr.com/blog/difference-between-people-analytics-and-hr-analytics/> (visited on 29/07/2019).
- Wheeler, K. (2015). *Big Data & People Analytics in Recruiting & Learning*. LinkedIn.